

a second head attached to the handle and having a front face, a back face, and at least one outer surface, the second head having a slot through the front and back faces and extending from the outer surface towards an interior of the second head;

wherein each slot has at least one cutting edge, and the first and second heads are configured to contact as the first and second heads rotate counter to one another so that the cutting edges apply a shearing force on the bone plate.

20. (New) The assembly of claim 19, wherein the first and second slots define opposing faces and at least one opposing face of each set of opposing faces has a cutting edge.

21. (New) The assembly of claim 19, wherein the at least one opposing face of each shearing element is beveled.

Solv H21 22. (New) The assembly of claim 21, wherein the other opposing face of each shearing element is beveled.

23. (New) The assembly of claim 19, wherein the back faces are substantially flat.

Solv H37 24. (New) The assembly of claim 23, wherein the back faces are adapted to slide against each other.

25. (New) The assembly of claim 19, wherein at least a portion of each handle is tapered.

26. (New) The assembly of claim 19, wherein the handles are configured at an acute angle when initiating rotation of the heads.

27. (New) The assembly of claim 26, wherein the angle formed by the handles of each head decreases as the heads are rotated.

28. (New) The assembly of claim 19, wherein the heads are disk shaped.

29. (New) The assembly of claim 19, wherein each slot has two cutting edges.

Sub H4 30. (New) A bone plate cutting apparatus for shearing by transverse forces a bone plate having a non-circular cross-section and a longitudinal axis, comprising:

a first shearing element comprising

a handle for manipulation of the first shearing element; and

a first head attached to the handle and having upper, lower, and side surfaces, and a slot through the upper and lower surfaces with a cutting element thereon, the slot having fixed dimensions and extending from the side surface and tapering from the side surface toward an interior of the first head; and

a second shearing element comprising

a handle for manipulation of the second shearing element; and

a second head attached to the handle and having upper, lower, and side surfaces, and a slot through the upper and lower surfaces with a cutting element thereon, the slot having fixed dimensions and extending from the side surface and tapering from the side surface toward an interior of the second head,

wherein rotation of the first and second heads counter to one another with the heads directly touching each other at the cutting edges applies a torsional shearing force on the bone plate in a plane transverse to the longitudinal axis of the bone plate.

31. (New) The apparatus of claim 30, wherein the upper and lower surfaces of each head are substantially smooth and flat.

32. (New) The apparatus of claim 30, wherein the length of each slot exceeds the distance between the upper and lower surfaces.

33. (New) The apparatus of claim 30, wherein the length of each slot exceeds the width of each slot.

34. (New) The apparatus of claim 30, wherein at least a portion of each handle is tapered.

Sub H5 35. (New) The apparatus of claim 30, wherein the handles are configured at an acute angle when initiating rotation of the heads.

36. (New) The apparatus of claim 30, wherein the angle formed by the handles of each head decreases as the heads are rotated.

37. (New) The apparatus of claim 30, wherein the heads are disk shaped.

38. (New) The apparatus of claim 30, wherein each slot has two opposing cutting edges.

Sub H6 39. (New) The apparatus of claim 30, wherein the first and second shearing element have substantially identical structure.

40. (New) A cutting assembly for shearing a bone fixation member having a longitudinal axis and opposing sides, comprising:

a first shearing element comprising

a handle for manipulation of the first shearing element;

a first head attached to the handle and having a front face, a back face having a surface a portion of which is substantially flat and at least one outer surface, the first head having a slot of fixed dimensions through the front and back faces and extending from the outer surface toward an interior of the first head, the slot defining opposing faces, at least one of such opposing faces tapering from the front face towards the back face such that the distance between the opposing faces at the front face is greater than the distance between the opposing faces at the back face; and

a second shearing element comprising:

a handle for manipulation of the second shearing element; and

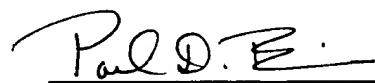
a second head attached to the handle and having a front face, a back face having a surface a portion of which is substantially flat, and at least one outer surface, the second head having a slot of fixed dimensions through the front and back faces and extending from the outer surface toward an interior of the second head, the slot defining opposing faces at least one of such faces tapering from the front face towards the back face such that the

distance between the opposing faces at the front face is greater than the distance between the opposing faces at the back face,

wherein the tapered opposing face of each shearing element forms a cutting edge thereon, and the cutting edges are configured to contact opposite sides of the bone fixation member when the back faces of the respective shearing elements are rotated while directly touching each other.

Respectfully submitted,

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Paul D. Bianco
For: Brian M. Poissant

Reg. No. 43,500
Reg. No. 28,462

PENNIE & EDMONDS LLP
1667 K Street, N.W.
Washington, DC 20006

(202) 496-4400

Preliminary Amendment Resp. to Office Action: 12/27/2000
Serial No.: 08/659,056
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Inventor: BAUER *et al.*
For: METHOD AND APPARATUS FOR CUTTING BODIES
HAVING NON-CIRCULAR CROSS SECTION



Pennie & Edmonds LLP: (202) 496-4400
Attorney Docket.: 8932-309
Date: 4/26/2001
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APPENDIX A. PENDING CLAIMS

19. A bone plate cutting apparatus for shearing by transverse forces a bone plate having a non-circular cross-section and a longitudinal axis, comprising:

- a first shearing element comprising
 - a handle for manipulation of the first shearing element; and
 - a first head attached to the handle and having a front face, a back face, and at least one outer surface, the first head having a slot through the front and back faces and extending from the outer surface towards an interior of the first head; and
- a second shearing element comprising
 - a handle for manipulation of the second shearing element; and
 - a second head attached to the handle and having a front face, a back face, and at least one outer surface, the second head having a slot through the front and back faces and extending from the outer surface towards an interior of the second head;

wherein each slot has at least one cutting edge, and the first and second heads are configured to contact as the first and second heads rotate counter to one another so that the cutting edges apply a shearing force on the bone plate.

20. The assembly of claim 19, wherein the first and second slots define opposing faces and at least one opposing face of each set of opposing faces has a cutting edge.

21. The assembly of claim 19, wherein the at least one opposing face of each shearing element is beveled.

22. The assembly of claim 21, wherein the other opposing face of each shearing element is beveled.

23. The assembly of claim 19, wherein the back faces are substantially flat.

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24. The assembly of claim 23, wherein the back faces are adapted to slide against each other.
25. The assembly of claim 19, wherein at least a portion of each handle is tapered
26. The assembly of claim 19, wherein the handles are configured at an acute angle when initiating rotation of the heads.
27. The assembly of claim 26, wherein the angle formed by the handles of each head decreases as the heads are rotated.
28. The assembly of claim 19, wherein the heads are disk shaped.
29. The assembly of claim 19, wherein each slot has two cutting edges.

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30. A bone plate cutting apparatus for shearing by transverse forces a bone plate having a non-circular cross-section and a longitudinal axis, comprising:

a first shearing element comprising

a handle for manipulation of the first shearing element; and

a first head attached to the handle and having upper, lower, and side surfaces, and a slot through the upper and lower surfaces with a cutting element thereon, the slot having fixed dimensions and extending from the side surface and tapering from the side surface toward an interior of the first head; and

a second shearing element comprising

a handle for manipulation of the second shearing element; and

a second head attached to the handle and having upper, lower, and side surfaces, and a slot through the upper and lower surfaces with a cutting element thereon, the slot having fixed dimensions and extending from the side surface and tapering from the side surface toward an interior of the second head,

wherein rotation of the first and second heads counter to one another with the heads directly touching each other at the cutting edges applies a torsional shearing force on the bone plate in a plane transverse to the longitudinal axis of the bone plate.

31. The apparatus of claim 30, wherein the upper and lower surfaces of each head are substantially smooth and flat.

32. The apparatus of claim 30, wherein the length of each slot exceeds the distance between the upper and lower surfaces.

33. The apparatus of claim 30, wherein the length of each slot exceeds the width of each slot.

34. The apparatus of claim 30, wherein at least a portion of each handle is tapered.

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35. The apparatus of claim 30, wherein the handles are configured at an acute angle when initiating rotation of the heads.

36. The apparatus of claim 30, wherein the angle formed by the handles of each head decreases as the heads are rotated.

37. The apparatus of claim 30, wherein the heads are disk shaped.

38. The apparatus of claim 30, wherein each slot has two opposing cutting edges.

39. The apparatus of claim 30, wherein the first and second shearing element have substantially identical structure.

40. A cutting assembly for shearing a bone fixation member having a longitudinal axis and opposing sides, comprising:

a first shearing element comprising

a handle for manipulation of the first shearing element;

a first head attached to the handle and having a front face, a back face having a surface a portion of which is substantially flat and at least one outer surface, the first head having a slot of fixed dimensions through the front and back faces and extending from the outer surface toward an interior of the first head, the slot defining opposing faces, at least one of such opposing faces tapering from the front face towards the back face such that the distance between the opposing faces at the front face is greater than the distance between the opposing faces at the back face; and

a second shearing element comprising:

a handle for manipulation of the second shearing element; and

a second head attached to the handle and having a front face, a back face having a surface a portion of which is substantially flat, and at least one outer surface, the second head having a slot of fixed dimensions through the front and back faces and extending from the outer surface toward an interior of the second head, the slot defining opposing faces at least one of such faces tapering from the front face towards the back face such that the distance between the opposing faces at the front face is greater than the distance between the opposing faces at the back face,

wherein the tapered opposing face of each shearing element forms a cutting edge thereon, and the cutting edges are configured to contact opposite sides of the bone fixation member when the back faces of the respective shearing elements are rotated while directly touching each other.